

REMARKS

Specification

The disclosure has been objected to because the full term of DSC and ENIG have not been stated. As is well known in the art, DSC is an acronym for die-side capacitor and ENIG is an acronym for Electroless Nickel/Immersion Gold. Applicant has amended paragraph 4 and 21 accordingly. Additionally, Applicant has amended paragraph 6 to indicate a reference to Figure 7 as opposed to Figure 8. No new matter has been added.

Claim Objections

The Examiner has objected to claims 1-10 for including informality. Applicant has amended claims 1-10 to more particularly point out and distinctly claim the subject matter which Applicant regards as the invention. As such, Applicant respectfully requests removal of the objections of claims 1-10.

Claim Rejections - 35 U.S.C. § 103

Claims 1, 3-10, 19 and 21-27 have been rejected under 35 U.S.C. 103(a) as being unpatentable over *Fukano* (U.S. Patent Number 5,986,348, hereinafter “*Fukano*”) in view of *Chan et al.* (U.S. Patent Number 4,983,804, hereinafter “*Chan et al.*”). Claims 28 and 30 have been rejected under 35 U.S.C. 103(a) as being unpatentable over *Fukano* in view of *Chan et al.* and further in view of *Dalal et al.* (U.S. Patent Number 6,618,267, “hereinafter “*Dalal et al.*”)). Claim 29 has been

rejected under 35 U.S.C. 103(a) as being unpatentable over *Fukano*, in view of *Chan et al.*, in view of *Dalal et al.* and further in view of Applicant's submitted prior art.

It is Applicant's understanding that the cited references fail to teach or render obvious Applicant's invention as claimed in claims 1-10 and 19-30. In claims 1-10 and 19-30, Applicant claims a microelectronic assembly which includes a substrate having bonding pads disposed on a mounting surface thereof the bonding pads including a ferromagnetic material. The microelectronic assembly further includes a surface mount component bonded to the substrate by the way of a solidified solder and including a magnetic layer disposed on a substrate side thereof. The magnetic layer cooperates with the ferromagnetic material in the bonding pads to establish a magnetic force of sufficient magnitude to hold the surface mount component on the substrate before and during soldering. That is, Applicant's claim a substrate having bonding pads with a ferromagnetic material and a surface mount component having a "*magnetic layer disposed on a substrate side thereof*."

It is Applicant's understanding that the cited references either alone, or in combination, fail to teach a microelectronic assembly which includes a substrate having bonding pads with a ferromagnetic material and a surface mount component having a magnetic layer disposed on a substrate side thereof. Applicant understands *Fukano* is disclosing a chip 10 having bonding pads 12a-12l. Layered on top of the bonding pad 12a is a first metal layer 18, and a second metal layer 20. On top of the second metal layer 20 is a ferromagnetic material 22. On top of the ferromagnetic material 22 is a wettable layer 24 such as gold. A solder bump 30 is formed on the gold layer 24. A magnet 32 is placed over solder bump 30 for a predetermined time until material 22 is fully magnetized. As such in *Fukano*, magnet 32 is not part of a surface mount component, let alone on a substrate side thereof a surface mount component as claimed by Applicant. As such *Fukano* does not teach a

surface mount component including a magnetic layer disposed on a substrate side thereof as claimed by Applicant.

Chan et al. discloses a method of selective soldering components by inductive heating. *Chan et al.* discloses providing a ferromagnetic material as part of a component so that an applied electromagnetic field will create sufficient heat in the ferromagnetic material to melt the solder. Specifically, *Chan et al.* discloses a method of attaching flexible substrate 12 to a printed circuit board 11. In one embodiment, a magnetic material 19 is formed on the back of the flexible substrate so that when alternating currents of opposite plurality are applied to two planar coils 23 & 24 located above and below the flexible circuit and printed circuit boards, the electromagnetic fields inductively heat the ferromagnetic material 19 to cause a solder in the vicinity of the material to melt. It is to be appreciated that the magnetic material 19 is formed on the back side of the flexible substrate 12 and is not formed on the substrate side as claimed by Applicant. Additionally, in a second embodiment, a ferromagnetic material 21 is formed in the printed circuit board 11. It is to be appreciated that the printed circuit board is not a surface mount component but rather is the substrate to which the surface mount component is mounted. As such, neither embodiment of *Fukano* disclose forming a magnetic layer on a substrate side of a surface mount component.

Accordingly, since neither *Fukano* nor *Chan et al.* disclose forming a magnetic layer on a substrate side of a surface mount component, the combination of references cannot possibly teach Applicant's claimed invention. As such, Applicant respectfully requests removal of U.S.C. 35 § 103(a) rejections of claims 1, 3-10, 19, and 21-27 and seeks an early allowance of these claims.

Additionally, since the secondary references of *Dalal et al.* and Applicant's submitted prior art fail to cure a deficiency of a combination of *Fukano* and *Chan et al.*

claims 28 and 29 and 30 are allowable for at least the reasons stated above. Accordingly, Applicant respectfully requests removal of U.S.C. 35 § 103(a) rejections of claims 28-30 and seeks an early allowance of these claims.

Pursuant to 37 C.F.R. § 1.136(a)(3), applicant(s) hereby request and authorize the U.S. Patent and Trademark Office to (1) treat any concurrent or future reply that requires a petition for extension of time as incorporating a petition for extension of time for the appropriate length of time and (2) charge all required fees, including extension of time fees and fees under 37 C.F.R. §§ 1.16 and 1.17, to Deposit Account No. 02-2666.

Respectfully submitted,

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